

TARS SERIES **TRANSPORTATION** **ATTITUDE REFERENCE** **SYSTEM**



Honeywell

TARS-B SERIES

The Transportation Attitude Reference System (TARS) is a packaged sensor array designed to report 6 degrees of freedom IMU data (angular rate and acceleration) and attitude for demanding heavy-duty and off-highway transportation applications.

The TARS Series enhances efficiency and productivity by reporting key data required to aid in system automation and motion monitoring. Its features may also be customized for specific vehicle applications allowing movement data to be filtered for extraneous environment and vehicle movements. (See Tables 1 and 2.)

FIGURE 1. TARS IMU

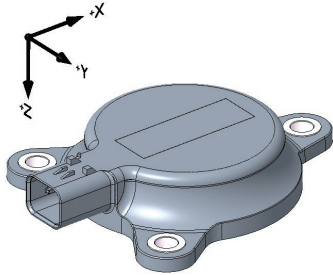


FIGURE 2. SIX DEGREES OF FREEDOM

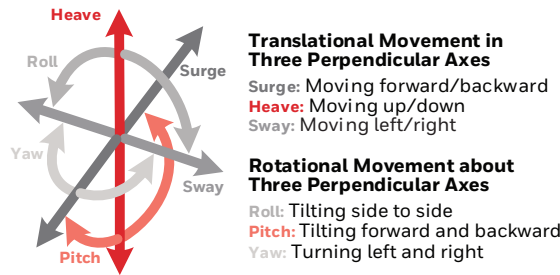


FIGURE 3. TARS IMU VS TILT SENSOR

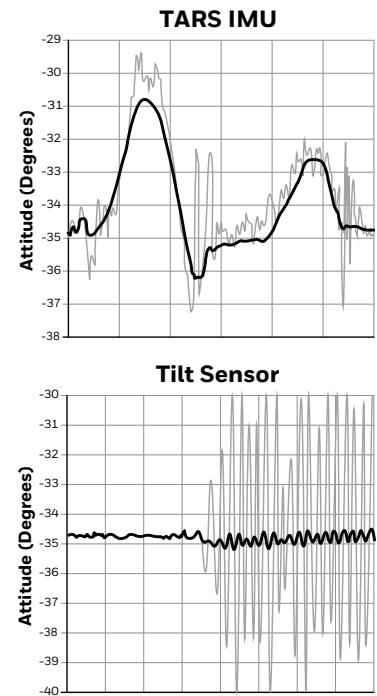


TABLE 1. SENSOR SPECIFICATIONS

Characteristic	TARS-HCASS (TARS SERIES)	TARS-BAASS (TARS-B SERIES)
Gyroscope		
Range	±245 deg/s	±500 deg/s
ARW (Angular Random Walk)	0.36 deg/√Hz	0.6 deg/√Hz
In-run bias stability	7.1 deg/hr	3.8 deg/hr
Accelerometer		
Range	±8 g	±6 g
VRW (Velocity Random Walk)	0.09 m/s/√Hz	0.08 m/s/√Hz
In-run bias stability	50 μg	25 μg
Inclination (pitch and roll)		
Range (roll/pitch)	±90 deg/±90 deg	±180 deg/±90 deg
Static error (at room temp)	±0.3 deg	±0.2 deg

TABLE 2. ORDER GUIDE

Catalog Listing	Description
TARS-BAASS	TARS-B Series Inertial Measurement Unit, 9 V to 36 V supply voltage, AMPSEAL 16™ Series connector
TARS-SHIELD	Zinc, die-cast protective shield

TABLE 3. COMPARISON CHART

Characteristic	Tilt Sensor	TARS-HCASS	TARS-BAASS	NAV IMU
Gyroscope	no	good	better	best
Accelerometer	good	good	better	best
Attitude	no	good	better	best
Cost	\$	\$\$	\$\$	\$\$\$\$

As shown in Figure 3, the TARS Attitude model fuses gyroscope and accelerometer data to produce high-quality attitude estimates and eliminates the effects of vibration and motion as observed in the tilt sensor.

ENHANCEMENTS

- Improved gyroscope stability reduces the amount of attitude correction and improves dynamic accuracy when the application is in constant motion. Also, the improved rotation rate range was implemented with minimal change in sampling noise.
- Improved accelerometer accuracy and stability enhances both static attitude accuracy measurements and improves motion tracking.
- Attitude calculation model enhancements include improved attitude correction and special functions such as mounting errors, offset correction and aid in motion monitoring.

FEATURES

- J1939 compliant
- Configurable and updateable
- Small form-factor, ruggedized PBT thermoplastic housing (IP67 and IP69K)
- Optional shield for impact protection
- Customizable filters to minimize noise
- Customizable Extended Kalman Filter
- 9 V to 36 V, supply, -40°C to 85°C operating temperature

POTENTIAL APPLICATIONS

Heavy-duty vehicle stability, motion tracking, work monitoring, operator assist and performance optimization.

WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgment or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items that Honeywell, in its sole discretion, finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While Honeywell may provide application assistance personally, through our literature and the Honeywell web site, it is buyer's sole responsibility to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this writing. However, Honeywell assumes no responsibility for its use.

FOR MORE INFORMATION

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WARNING PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

WARNING MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

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